

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) ~~Non-homogeneous~~ A crystalline non-homogeneous adsorbent ~~constituted by at least one crystal formed from a core and~~ comprising a crystalline core having a size between 0.2 and 50  $\mu\text{m}$  combined with at least one crystalline continuous outer layer characterized in that having a thickness between 0.1  $\mu\text{m}$  and 100  $\mu\text{m}$  wherein the core of said adsorbent has a volume adsorptive capacity representing at least 35% of the volume of the adsorbent and the outer layer has a diffusional selectivity greater than 5, measured as the ratio of diffusion coefficients ( $\text{m}^2/\text{sec}$ ) at 200°C of 3-methylpentane/2,2-dimethylbutane, said core and outer layer having a zeolitic diffusional selectivity than the core.
2. (Currently Amended) ~~Non-homogeneous~~ A non-homogeneous adsorbent according to claim 1, wherein ~~characterized in that~~ the volume adsorptive capacity of the core represents at least 40% of the volume of the adsorbent.
3. (Currently Amended) ~~Non-homogeneous~~ A non-homogeneous adsorbent according to claim 1, wherein ~~characterized in that~~ the diffusional selectivity of the outer layer is greater than 10.
4. (Currently Amended) ~~Non-homogeneous~~ A non-homogeneous adsorbent according to claim 1, wherein ~~characterized in that~~ the adsorptive capacity of the core is greater than that of the continuous outer layer.
5. (Cancelled)
6. (Currently Amended) ~~Non-homogeneous~~ A non-homogeneous adsorbent according to claim 1, wherein ~~characterized in that~~ the core contains a crystallized micro- or mesoporous solid.

7. (Currently Amended) ~~Non-homogeneous~~ A non-homogeneous adsorbent according to claim 1, ~~wherein characterized in that~~ the continuous outer layer contains a crystallized microporous solid.
8. (Cancelled)
9. (Cancelled)
10. (Cancelled)
11. (Currently Amended) ~~Non-homogeneous~~ A non-homogeneous adsorbent according to claim 1, ~~wherein characterized in that~~ the continuous outer layer has a thickness between 0.1 and 10  $\mu\text{m}$ .
12. (Currently Amended) ~~Non-homogeneous~~ A non-homogeneous adsorbent according to claim 1, ~~wherein both characterized in that~~ the core and said continuous outer layer ~~are~~ comprise zeolitic solids, the zeolite in the core being different from that in the continuous outer layer.
13. (Currently Amended) ~~Non-homogeneous~~ A non-homogeneous adsorbent according to claim 1 ~~characterized in that~~ it is in spherical or cylindrical form.
14. (Currently Amended) ~~Non-homogeneous~~ A non-homogeneous adsorbent according to claim 13, ~~wherein characterized in that~~ the radius of the core represents at least 40% of the total radius of the adsorbent.
15. (Currently Amended) ~~Use of an adsorbent according to claim 1 in a~~ A gas- or vapour-separation process comprising passing a multicomponent gas through a zone comprising non-homogeneous adsorbent according to claim 1.

16. (Currently Amended) ~~Use of an adsorbent according to claim 1 in a~~ A liquid-separation process comprising passing a multicomponent gas through a zone comprising non-homogeneous adsorbent according to claim 1.
17. (New) A non-homogeneous adsorbent according to claim 6, wherein the continuous outer layer contains a crystallized microporous solid.
18. (New) A non-homogeneous adsorbent according to claim 1, wherein the core comprises a faujasite structural type zeolite and the outer layer comprises an MFI structural type zeolite.
19. (New) A non-homogeneous adsorbent according to claim 18, wherein the faujasite structural type zeolite comprises zeolite X and the MFI structural type zeolite comprises silicalite-1.
20. (New) A gas separation process comprising passing a multi component gas through a zone comprising non-homogeneous adsorbent according to claim 18.
21. (New) A process according to claim 20, wherein said gas comprises mono-branched paraffins and di-branched paraffins.
22. (New) A non-homogeneous adsorbent according to claim 12, produced by first preparing a solid zeolite core and next preparing a dispersion of a second zeolite for the outer layer and adhering particles of said outer layer zeolite to said core zeolite.
23. (New) A process for producing non-homogeneous zeolitic adsorbents comprising preparing a solid core of a first zeolite and a dispersion of nano particles of a second zeolite, and contacting said dispersion with said solid core so as to adhere particles of said second zeolite onto said first zeolite.

24. (New) A crystalline non-homogeneous adsorbent comprising an empty core having a size between 0.2 and 50  $\mu\text{m}$  combined with at least one crystalline continuous outer layer having a thickness between 0.1  $\mu\text{m}$  and 100  $\mu\text{m}$  wherein the core of said adsorbent has a volume adsorptive capacity representing at least 35% of the volume of the adsorbent and the outer layer has a diffusional selectivity greater than 5, measured as the ratio of relative diffusion coefficients ( $\text{m}^2/\text{sec}$  at 200°C of 3-methyl pentane/2,2-dimethyl butane).
25. (New) A liquid-separation process comprising passing a multicomponent gas through a zone comprising non-homogeneous adsorbent according to claim 24.
26. (New) A crystalline non-homogeneous adsorbent according to claim 24, wherein the size of the core is between 0.5 and 5  $\mu\text{m}$  and the outer layer has a thickness of 0.1-10  $\mu\text{m}$ .
27. (New) A non-homogeneous adsorbent according to claim 1, wherein the core of the adsorbent has a negligible diffusional resistance.